PREPARED TESTIMONY OF MATTHEW FREEDMAN
BEFORE THE LITTLE HOOVER COMMISSION
ON RENEWABLE ENERGY GOALS AND COSTS

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As an active participant in the legislative and regulatory debates on energy policy over the past decade, I am pleased to offer the Little Hoover Commission my perspective on renewable energy policy with a focus on the costs and potential benefits for California consumers. My testimony offers some thoughts on each of the key issues identified by the Commission for this hearing.

For the past 12 years, I have served as TURN's lead attorney on renewable energy issues. In that capacity, I worked closely with the Legislature on the original Renewable Portfolio Standard (RPS) bill (SB 1078 (Sher)), on subsequent legislation to refine the 20% RPS program (SB 67 (Bowen) and SB 107 (Simitian)) and on the recently enacted 33% program (SBx2 (Simitian)). Since 2000, I have participated in all major renewable energy proceedings at the California Public Utilities Commission (CPUC) and key RPS implementation activities at the California Energy Commission (CEC). In addition, I regularly review renewable power supply, pricing and contract data as a member of the Procurement Review Groups advising San Diego Gas & Electric, Pacific Gas & Electric and Southern California Edison.

I. REALIZING THE BENEFITS OF CALIFORNIA'S RENEWABLE ENERGY GOALS DEPENDS UPON ADOPTING THE RIGHT POLICIES

California's commitment to ambitious renewable energy goals should provide a variety of benefits to consumers. These benefits include stable electric prices, downward pressure on real-time and day-ahead wholesale electric prices, the displacement of fossil fuels used in California, enhanced energy security, a

reduction in air pollution and greenhouse gases emitted by conventional generation in California, greater private investment in generating infrastructure, enhanced opportunities for skilled employment, greater local and state tax revenues and technology innovation.

The degree to which these benefits are realized depends upon the specific policies and practices used to achieve our statewide renewable energy goals. Today we are faced with an array of renewable energy incentive and procurement programs including:

- RPS competitive solicitations and bilateral contracting.

- Continued contracting of existing resources pursuant to the Public Utility Regulatory Policy Act (PURPA).

- Auctions for grid-connected renewable generation up to 20 MW in size under the newly created Renewable Auction Mechanism (RAM).

- The SB 32 (Negrete McLeod) Feed-in Tariff program for grid-connected renewable generation up to 3 MW in size.

- Net metering and direct financial subsidies for behind-the-meter renewable energy systems.

- New subsidies and research awards to be developed by the CPUC under the newly created Electric Procurement Incentive Charge (EPIC) which is the successor to the recently sunset Public Goods Charge.

Some stakeholders believe that more programs are needed to accelerate the pace of change. Every year, more proposals are circulated in the Legislature

(and at the CPUC) to layer addition procurement mechanisms and subsidies on top of existing initiatives. Efforts to create new initiatives run the risk of undermining key elements of California's existing programs. These risks include the following:

- Duplicative procurement programs can drive up overall costs. Efforts to use competition to drive down prices for consumers can be defeated if sellers can arbitrage multiple programs to obtain the highest possible price.

- Creating excessive demand under artificially compressed timelines can cause the market to overheat, drive prices upward, and spur hasty policy changes that lead to market collapse.

- Offering prices well in excess of the cost of financing, owning and operating renewable generation may deny consumers the benefits of cost reductions as certain technologies develop and production processes evolve.

- Poorly designed subsidy programs may generate few real-world results despite the fact that money is disbursed.

Policymakers need to pay close attention these risks as new and expanded initiatives are forwarded by various interest groups. Although the motivations of such groups may be pure, even one badly designed program could undermine the overall effectiveness of the existing policy portfolio and drive up total costs to consumers.

II. DIFFICULTY OF ACCURATELY FORECASTING THE COSTS OF ACHIEVING THE 33% STATEWIDE TARGET

The Commission seeks testimony on the expected cumulative costs of these renewable energy programs. Unfortunately, it is very challenging to estimate the net customer rate impact from these renewable energy programs. Although I understand and appreciate the desire for answers and forecasts, the reality is that cost estimates become stale almost immediately after being released. The renewable energy market is extremely dynamic and prices have shifted rapidly over relatively short periods of time. As a result, I hesitate to offer an informed estimate of the costs at this time.

I can illustrate this challenge by referencing the most comprehensive effort to model the costs of a 33% RPS program. In June 2009, the CPUC released its 33% RPS implementation analysis. This report projected that increasing the RPS from 20% to 33% would result in a 7.1% net increase in customer rates by 2020. If the 33% target is achieved based on extensive development of smaller-scale distributed renewable generation, the CPUC report projected a 14.6% net rate increase relative to maintaining the 20% requirement.

While these projections represent an interesting snapshot, they are already outdated based on market developments since mid-2009. Specifically, the CPUC report assumed heavy reliance (7,200 MW) on new solar thermal generation to meet the 33% target. Since 2009, the landscape has changed significantly. Today, only 3,400 MW of solar thermal projects are under active development pursuant to utility contracts. Almost 3,000 MW of solar thermal projects have been canceled, indefinitely delayed or are converting to photovoltaics. Since solar thermal projects represent the highest cost options in the utility portfolios, the shift away from these technologies to cheaper alternatives has significant consequences for rates.

Earlier estimates of increased costs attributable to a "high DG" scenario no longer appear to be reliable. The 2009 CPUC report forecasted that new photovoltaic systems would provide power at a cost ranging from $289-464/MWh. Yet recently released data shows that, in 2011, the CPUC approved actual contracts for new photovoltaic systems at prices ranging from $114-$146/MWh with some of the lowest prices for systems less than 20 MW in size. This dramatic drop in photovoltaic pricing suggests that assumptions commonly held just a few years ago have already been turned on their head.

Recent solicitations held by the IOUs show continuing declines in the price of power from photovoltaic projects that outpace previously forecasted cost reductions. Wind prices are also declining relative to their 2007-2009 levels due to increased availability of turbines and the slackened pace of new development outside California. Moreover, the number of bids and quantity of resources offered in these solicitations stands at an all-time high. Utilities are able to select the best options amidst a large bid stack, thereby ensuring that prices are not unreasonably inflated due to profiteering by sellers.

One of the biggest future uncertainties relates to the continuation of federal tax credits. These credits substantially reduce the costs of renewable energy projects to California consumers and are essential to achieving reasonable pricing. The Production Tax Credit, which provides almost 2 cents per kwh to new wind projects, is due to sunset at the end of 2012. The Investment Tax Credit, which provides a 30% federal credit for investments in solar facilities, is slated to sunset at the end of 2016. Unless these two credits are extended, there will be a significant increase in prices offered by new solar and wind projects achieving commercial operation after the current sunset dates.

III. LEAST-COST SOLUTIONS CAN BE ACHIEVED BY RELIANCE ON COMPETITIVE SOLICITATIONS THAT PRIORITIZE RESOURCES OFFERING SUPERIOR VALUE TO CALIFORNIA CONSUMERS

The changing market dynamics highlighted in the previous section demonstrate the need to retain flexibility in the specific resources used to achieve a 33% renewable portfolio. This flexibility can be achieved by relying on frequent and streamlined competitive auctions to select least-cost resources that provide the greatest value to California consumers. The use of competitive solicitations will allow the utilities to take advantage of the latest movements in market prices and ensure that projects offering superior value are used to satisfy renewable energy goals.

Some stakeholders have argued for European-style Feed-in Tariffs (FITs) as an alternative, or a supplement, to the existing competitive processes. I believe that this approach would drive up costs and allow the lion's share of technology cost reductions to be retained by investors rather than passed onto consumers. While the European experiment with FITs has proven successful in terms of stimulating large quantities of new solar installations, the total costs passed onto consumers are staggering. Some European nations have been forced to scale back their FIT policies due to excessive prices that triggered a huge response from private developers seeking extremely generous investment returns. For example, Spain sharply curtailed its FIT program in 2008 after a 'gold rush' led to 2,500 MW of new photovoltaic projects in a single year and placed the federal government on the hook for billions of Euros of power purchase obligations. In January 2012, Spain announced that it would end its FIT program due to its large budget deficits and the high cost of the program.

While well-intentioned, generous FIT policies have not been able to solve the 'boom-bust' cycle that has characterized renewable energy development over

the past decades. California can avoid this trap by reliance on competitive processes, avoiding the temptation to adopt unachievable targets, maintaining a long-term policy, and relying on stable procurement mechanisms that evolve incrementally in response to lessons learned. The existing 33% RPS policies and the newly implemented RAM solicitations should incorporate these features and, with any luck, will help to minimize the cost of the renewable energy goals for ratepayers.

Some interest groups have argued for a greater reliance on out-of-state renewable resources as a strategy for minimizing costs. Although some out-of-state renewable resources offer superior pricing, many cannot provide energy that is useful to California consumers because of transmission limitations. For example, wind projects located in Alberta (which are RPS eligible) may offer low prices but cannot physically deliver their energy to California consumers at reasonable cost. As a result, procurement from these resources either involves the transfer of electronic Renewable Energy Credits (RECs) that offer no tangible value to California consumers, or forces utilities to procure energy in Alberta that must be resold within that region at a potential loss. By contrast, facilities that can deliver physical energy directly to California consumers provide more value by hedging against price volatility in California, displacing fossil fuels used in California, lowering real-time energy prices in California, reducing the need for additional fossil generating capacity in California, contributing to resource adequacy needs, and minimizing air pollution in California.

The Legislature carefully considered these issues in the debates over the structure of the 33% RPS program. I believe that SBx2 represents a reasonable outcome for consumers. The new law requires the lion's share of new procurement requirements to be satisfied by resources that physically deliver their energy into California while still allowing a sizable portion to be met

through the use of tradable RECs and "firmed and shaped" products from a anywhere in the West (including Mexico and Canada).

ROLES OF THE CPUC AND CEC

The California PUC has done a good job implementing the 20% and 33% RPS policies. These are complicated programs that require substantial attention to detail and consideration of many competing interests. The CPUC has focused on ensuring that Investor Owned Utilities (IOUs) procure "least cost" and "best fit" renewables through competitive solicitations, bilateral negotiations, and utility-ownership options. For the most part, the CPUC has been successful in protecting ratepayer interests and preventing IOUs from exploiting potential loopholes.

My criticisms of the CPUC are focused on the institutional reluctance to reject, or require modifications to, contracts for excessively priced projects. The CPUC has rejected very few contracts due, in part, to worries that a rejection could undermine markets and also in response to intensive lobbying by companies with a financial stake in the outcome. Recently, the CPUC has more actively scrutinized the reasonableness of new renewable power contracts in rejecting both an overpriced wind project proposed by PG&E and forcing a renegotiation of a solar contract that was priced well above current market realities.

A number of legacy contracts are now coming back to the CPUC requiring approval of modifications to various terms and conditions. Many of these contracts are priced above current market alternatives and could be replaced by cheaper resources. The CPUC should take advantage of this opportunity to reduce overall costs rather than simply approving every contracted project that requires additional approvals.

The California Energy Commission (CEC) is now charged with overseeing compliance by Publicly Owned Utilities (POUs) with the 33% RPS obligation. The enactment of SBx2 marks the first time that POUs are subject to enforceable renewable procurement requirements. To date, some POUs have significant renewable energy portfolios (e.g. SMUD, Alameda, Silicon Valley Power, Palo Alto) while others continue to resist the notion that they must comply and have not made significant commitments to new renewable resources. I am underwhelmed by the progress of most POUs in meeting these new renewable energy targets and urge the CEC to adopt meaningful rules that provide sufficient flexibility to account for real-world challenges while preventing recalcitrant POUs from engaging in what amounts to civil disobedience.

CONCERNS ABOUT THE ROLE OF THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR

The California Independent System Operator (CAISO) has recently taken a number of steps that are likely to increase the costs of achieving a 33% renewable portfolio. In 2010, the CAISO began circulating preliminary modeling on the impact of a 33% renewable portfolio on the need for conventional resources to accommodate the intermittent operation of solar and wind facilities. Their initial modeling results called for an additional 4,500 MW of additional gas-fired resources above the adopted planning reserve margins by 2020. These results were immediately used by some to argue for an aggressive campaign to solicit and build new gas-fired resources, and to argue that the 33% renewable target would be more costly than previously anticipated. TURN and several other groups expressed serious concerns with the validity of these modeling assumptions and urged that they not be used for any planning purpose.

In mid-2011, the CAISO served testimony in the CPUC's Long-Term Procurement Plan proceeding conceding that the latest model runs (which incorporated CPUC-specified assumption) showed no need for new conventional resources for renewable integration through 2020. In light of these substantial revisions, practically all parties entered into a settlement agreeing that the CAISO modeling did not show a need for new resources for purposes of renewable integration and agreed to work collaboratively on new modeling in 2012. Since that time, TURN and other stakeholder groups have been providing feedback to the CAISO identifying problems with the modeling inputs and assumptions. The CAISO has not modified its model in response to these concerns.

Only months after the CPUC settlement was submitted, the CAISO announced new modeling results and asserted an urgent need for over 3,000 MW of new capacity by the end of 2017 to support renewable integration. Based on this new result, the CAISO unilaterally decided to offer a $2.9 million/month contract to the Sutter gas-fired power plant after Calpine threatened to engage in a temporary shut down due to low market prices for energy and capacity. The costs of the contract would be passed onto all retail customers within the CAISO. TURN and many other parties (including the major utilities) were surprised by this development given the fact that the CAISO had just signed the CPUC settlement agreement. The CAISO has filed at the Federal Energy Regulatory Commission seeking approval of the Calpine contract and TURN joined with other parties (most notably the California Municipal Utilities Association) to oppose the CAISO request.

The late 2011 CAISO modeling was never reviewed by any party, is riddled with methodological errors, and appears to have been prepared for the sole purpose of justifying a financial bailout for Calpine. Moreover, the CAISO is attempting to usurp the CPUC's role in long-term resource planning by

declaring itself the sole arbiter of what resources are needed and placing little emphasis on cost minimization. This short circuiting of the state's resource planning process is very troubling and bodes poorly for future inter-agency cooperation. Ratepayers may be forced to bear untold additional costs based on the CAISO's own bias towards making excessive payments designed to ensure massive surpluses in system resources.

I summarize these recent actions by the CAISO to highlight two important points. First, there is no accepted analysis showing a need for substantial new resource additions to support renewable integration by 2020. Second, the CAISO is already proposing new expenditures of ratepayer money based on the justification that these costs are necessary to support renewable resource integration. More peer-review of the CAISO modeling efforts may demonstrate that these expenditures are entirely unnecessary. Policymakers should be cautious about claims that many new power plants are needed to accommodate renewable resources and instead recognize that some entities may use this justification to achieve other unrelated objectives.

CONCLUSION

I appreciate the opportunity to provide this testimony to the Commission and would be happy to expand on my written comments during my oral presentation.